State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-3406 FAX (603) 271-7894

January 8, 2001
Letter of Deficiency
DAM #005.04

Ms. Edith N. Chase
HC 63, Box 51
Alstead, NH 03602

RE: Warren Lake Dam #005.04, Alstead

Dear Ms. Chase:

The Department of Environmental Services, Dam Bureau (DES) consistently strives to enhance the safety of dams in New Hampshire through its dam safety program. One of the many instruments that play a part in reaching this goal is our inspection program. DES is forwarding this correspondence to you to advise you that in accordance with RSA 482:12 and Env-Wr 502.02, an inspection of the subject dam was conducted on November 7, 2000. During this visual inspection and/or file review, the following deficiencies were observed:

The concrete cap over the right stone embankment is cracked in several locations and mortar has previously been applied to the cracks. The displacement of the cap was approximately 3 inches and appears to be similar to previous inspection photos. Due to the nature of the stone face on the downstream side of the dam movement would be expected;

There was a small amount of debris in front of the low level outlet; and

3 There was no operation and maintenance plan on file with the DES.

DES believes that the above deficiencies can be corrected by performing the following items as indicated:

February 1, 2001:

1. Remove the debris in front of the low level outlet and continually remove the debris there after;

2 Prepare and submit to the DES a written operational procedure plan. The plan should describe the control of impoundment levels, monitoring and maintenance procedures, and identify emergency contact personnel; and

On a continual basis:

3. Monitor the concrete cap for cracking and movement on the top of the embankment along the right side of the dam and repair as necessary.

Additional observations made at the time of this site visit that do not require action include:

The seepage at the toe of the right side of the spillway, as indicated in previous reports, appeared to be nonexistent on this date. It was reported to DES that clay had been placed along the upstream face to eliminate the seepage; and

2. The vegetation along the crest, upstream embankment, and toe of the dam appears to be well maintained on a regular basis;

As part of this report the DES conducted a hydrologic analysis of the subject dam and drainage area with the results indicated as follows. The 100-year, 24-hour storm inflow was calculated to be approximately 1636 cfs with a routed outflow of 347 cfs, as determined with the aid of the SCS curve number method and the software HydroCAD (Version 5.0). Without operations, this dam can pass the 100-year, 24-hour design storm with approximately 6-inches of freeboard. As indicated on site during this inspection this dam is monitored during high water events. It may be prudent to operate this dam by temporarily removing stoplogs prior to a storm of high intensity to increase the storage behind the dam, thus reducing the flow out during the peak of the storm and minimizing the impact to Pine Cliff Road immediately downstream of the dam. As indicated in the Emergency Action Plan (EAP), as submitted by SFC Engineering Partnership, Inc. (SFC), the outflow for the 100-year, 24-hour storm was determined to be 39 cfs with 1.9 feet of freeboard (water level at the peak of the storm approximately 7 inches above the crest of the spillway). From review of the photos taken at the site on November 7, 2000 it is clear by the high water marks on either side of the spillway, that the water level normally ranges up to approximately 10 inches above the spillway crest. It is believed by DES that the more recent HydroCAD analysis performed for this report is more accurate to the conditions at the site.

The breach flow at the time of the 100-year, 24-hour storm was calculated to be 863 cfs as determined by SFC. Using the HydroCAD results and the Army Core of Engineers rule of thumb the breach flow would be approximately 1230 cfs. This writer believes that the breach flow as used by SFC is less than what would actually occur during the 100-year, 24-hour storm. However, SFC does indicate that State Route 123 would be overtopped in several locations. Additionally, SFC indicates minor flooding of property and habitable structures approximately 1 mile downstream of the dam. If the dam breach flow were in the order of 1230 cfs more damage would be likely downstream than assumed by SFC. Therefore, DES believes that the current classification as a significant hazard dam ("B") is justified.

DES is requesting that you complete and submit the attached "Intent to Complete Repairs" form, within 30 days of receipt of this letter, that will provide for correction of the identified deficiencies by the date(s) indicated above. If you believe changes to the items of work or dates are necessary, please make the changes directly on the form and provide a brief explanation. We have enclosed a self addressed stamped envelope for you to return this form.

Our intent in sending you this correspondence is to make you aware of items that DES believes warrant your attention to insure the continued safe operation of your dam. It is our hope that, through the submittal of the attached form and a commitment to keeping a well-maintained dam, you will voluntarily comply with the requested items of work. If we do not receive the intent form or a similarly adequate written reply, we will assume that you are in agreement with our findings and recommendations and DES will carry out follow-up inspections accordingly.

If you have any questions or comments regarding this Letter of Deficiency or would like to be present at future inspections, please contact me at 271-3406, or write to the Water Division at the address listed on the top of the previous page.

Sincerely,

COPY

Dale F. Guinn
Dam Safety Engineer

Attachments Guideline for an O&M plan, DB8, DB13
cc: Margaret Perry
John Mann & Ellen Chase
Gretchen Rule
Town of Alstead
Certified # 7099 3400 0002 9772 8984
DFG/was/h:/safety/wendy/lod/005-04blod.doc